Gender and Risky Investment: Do Markets Reflect or Alleviate Gender Stereotypes in Leadership?

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Abstract

We examine whether shareholders' responses to risky investment decisions are influenced by the gender of the firm's manager, particularly when these decisions directly affect the fundamental value per share. Our findings indicate that male and female managers make similar investment choices, that shareholder beliefs about the managers' choices are generally accurate, and that market prices do not differ by manager gender. These findings suggest that gender diversity in leadership does not negatively affect shareholder valuation. However, when participants are explicitly asked to compare the investment of male and female managers, strong gender stereotypes emerge, and most expect male managers to take on more risk. A similar bias is evident in share price comparisons, with male-led firms slightly favored, although the effect is weaker than that observed in the beliefs about investment decisions. This pattern suggests that, while individual judgments may be biased, market mechanisms can partially alleviate such biases.

Keywords: Gender; Risk Aversion; Corporate decisions; Experimental Finance
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1 Introduction

According to Catalyst, in 2022 just 9% of CEOs and 22% of directors in Fortune 500 firms were women. This persistent "gender gap", the underrepresentation of women in executive positions such as corporate CEOs and board members, is increasingly recognized as a major issue within the Environmental, Social, and Governance (ESG) policy landscape. While the number of female CEOs remains low, the proportion of women serving as board directors has been gradually increasing, largely helped by policy interventions in several countries, including the introduction of a minimum ratio of female directors on corporate boards.

There is little consensus on economic models that can rationalize the existing gender gap, however, one frequently cited factor is the perception that women are more risk-averse than men. What are the potential consequences of such differences in risk preferences? Consider the case of CEOs. From the perspective of the company's (risk-neutral) owners, a risk-averse CEO may under-invest in high-return but uncertain projects or systematically favor safer, lower-yield investments.[1] As a result, firms may prefer to appoint less risk-averse CEOs, which, if women are perceived to be more risk averse, can lead to a preference for male leaders.[2] The same reasoning applies to directors. More risk-averse directors may be less inclined to support higher risk strategic decisions, potentially influencing the company's appetite for innovation or expansion. Thus, even if risk preferences do not differ systematically by gender, a perception that women are more risk averse than men may help explain the gender gap in leadership roles.

In this paper we design an experiment to investigate whether gender differences in risk aversion can help explain such aspects of corporate behavior. Participants in our experiment take on the role of either (i) market participants (shareholders) who evaluate the decisions of corporate CEOs, or (ii) CEOs (hereafter referred to as managers), who make an investment decision. As a treatment, we vary the gender of the manager whose investment decision directly affects the firm's fundamental value per share. We begin by testing for differences in the investment decisions of male and female managers. Next, we assess whether market participants perceive female managers as more risk-averse, and whether that perception is reflected in market prices. If female managers are indeed

[1] Evidence consistent with lower risk taking in female CEO-led firms is shown in Faccio et al. (2016).

[2] Alternatively, companies could offer female executives higher-powered incentive schemes to offset greater risk aversion, though this should be reflected in higher compensation for female CEOs/executives, which is typically not observed in the data.

perceived as more risk-averse and, therefore, invest less in risky projects, we would expect this to result in lower corporate valuations, i.e., share prices.

Experiments serve as a valuable complement to empirical studies by addressing key limitations such as selection bias and the lack of data on critical but unobservable variables. This is particularly relevant in the empirical corporate finance literature that examines whether the gender of corporate decision makers affects firm outcomes. Much of this empirical work focuses on directors, due to the relatively recent introduction of regulatory gender quotas, which can be used to construct natural experiments and estimate the effect of increasing the proportion of female directors on a board. However, it remains challenging to disentangle the role of risk preferences from other potential confounding factors, such as shifts in the *networks* of board members that occur when new female directors are appointed (Renneboog and Zhao, 2011; Inci et al., 2017). Experimental approaches offer a way to abstract from these complexities, allowing researchers to directly test behavioral mechanisms in a controlled setting.

Our findings indicate that investment decisions are generally similar across male and female managers, and that participants' elicited point beliefs about these decisions are generally accurate. Most notably, we observe that share values do not vary by the manager's gender, suggesting that gender diversity in leadership does not negatively affect market valuation. However, when participants are explicitly asked whether male or female managers invest more in risky projects, over 80% expect male managers to invest more in risky projects than female managers. A similar, although less pronounced, bias is evident in expectations about share prices, with many anticipating higher share prices under male managers. This suggests that while individuals may have gender-biased stereotypes, such biases are not reflected in market outcomes.

Our paper contributes to a better understanding of how gender composition of a firm's leadership may influence market valuation. The current literature mainly focuses on gender differences in individual decisions, defined as risky investments in our paper, and the beliefs regarding any gender difference. In our environment, we study how shareholder beliefs interact in a market setting, and determine share prices, or firm value. Thus, we are able to provide a more direct way to evaluate the impact of gender in corporate decision-making, and the resulting market outcomes.

It is worth noting that, similar to our study, a recent paper by Carvalho (2025) examines whether a manager's gender influences market responses, using empirical data. The key difference lies in focus. Carvalho (2025) explores how markets respond to earn-

ings news from male versus female managers and shows that shareholders underreact to bad news from male managers, indicating a biased belief-updating, even though actual performance does not differ by gender. Our paper, instead, investigates whether market reactions to managers' investment decisions vary by gender. We find that although participants expect male managers to take more risk, this belief bias does not translate into differences in market valuation.

The paper is structured as follows. Section 2 reviews the relevant literature. Section 3 presents the environment, section 4 introduces the testable hypotheses, while section 5 describes the procedures used in the experiment. In section 6 we present the results of our study, before offering some concluding remarks. The Appendix provides additional materials, including interface screenshots, experimental instructions, and supplementary analyses.

2 Related literature

The question we address in this study lies at the intersection of several broad strands of literature. We therefore begin by reviewing key studies on gender and risk aversion, then connect these insights to the literature on corporate decision-making and asset pricing.

2.1 Gender and risk aversion

Surveying the existing literature in 2009, Croson and Gneezy concluded that the majority of evidence suggests that women are more risk averse than men. However, subsequent research has questioned this conclusion. For example, Filippin and Crosetto (2016), reviewing 54 replications of the Holt and Laury (2002) mechanism[3] (HL hereafter) find that gender differences are weak, and/or not economically significant. More sizable differences appear when using a more straightforward task such as an ordered lottery list (Eckel and Grossman, 2002), a finding supported by several replication studies.[4]

Another way to study risk preferences is through an investment game (Gneezy and Potters, 1997), where subjects select how much of an endowment they would like to invest in a risky option. This task is also similar to the investment game in Magnani et al. (2022), which we employ in our study. Charness and Gneezy (2012) review 15

[3] A widely used risk elicitation task, which takes the form of a multiple price list involving lotteries with two possible outcomes.

[4] See the discussion in Filippin and Crosetto (2016).

studies using the investment game based on Gneezy and Potters (1997) and find strong evidence that women are less willing to take risks compared to men (at least 10% difference in investment of the initial endowment). Nelson (2015) and Sent and van Staveren (2019) analyze several articles combining different elicitation techniques. Both conclude that gender differences are minor, and that observed decisions have two important features: (i) an overlap in the distribution of female and male choices, and (ii) intra-gender differences.

In addition to studying the effect of gender on individual risk preferences, some studies have also looked at decisions taken on behalf of others, or delegated risky choices. Friedl et al. (2020) study gender differences using an ordered lottery list, where the individual choice determines the lottery picked for other participants. They find mixed results in two samples. In a gender balanced sample of 192 university students in Germany, women appear to be more risk-averse than men, but in Papua New Guinea (196 participants, 80 women), women make the same choices as men.[5]

It is also important to consider whether the risk preferences of corporate decision makers conform to the observed general gender patterns. Studies investigating a sample of Swedish executives (Adams and Funk, 2012, and Adams, 2024) argue that the sample of females who have chosen to work as executives have similar risk attitudes to their male colleagues. Our findings similarly suggest that there is no gender difference in risk-taking when subjects make decisions for themselves, or on behalf of others.

2.2 Gender in corporate decisions

We next turn to the literature investigating whether gender affects top corporate decisions. The largest empirical literature has so far focused on the role of gender in corporate boards, motivated by Norwegian regulatory changes which introduced a minimum 40% female quota requirement for the boards of listed companies, which pushed the fraction of female directors from 10% in 2004 to 40% in 2007 (when the law came into effect). Similar regulatory interventions have since been introduced in many other countries. The literature analyzing these interventions has been primarily empirical, attempting to estimate the stock market price or accounting performance changes following the interventions. Early analysis of the Norwegian case (Ahern and Dittmar, 2012) argued that there was major value destruction as a result of the gender quotas,

[5]For an overview of studies that focus on risky decisions on behalf of others, see Eriksen et al. (2020) and Füllbrunn et al. (2022).

but later reappraisals of this evidence (Eckbo et al., 2022a,b) have refuted the negative effect. Analysis of interventions in other countries have failed to find a consensus.[6] For our purposes, the interesting question raised by this literature is why the imposition of a quota should affect firm value.

The empirical literature on board quotas suggests that the relatively lower experience of newly appointed (female) directors, in particular their smaller professional networks, may be a driving factor in the quality of board decisions. A smaller body of work has argued that new female board members may be more risk averse, which can affect the board's strategic decisions (see e.g. Sila et al., 2016). An alternative method to look at gender differences in risk aversion among directors is to look at their trading in own company stock (insider trading). Eckbo and Ødegaard (2025) fail to find gender differences in the intensity of insider trading among directors, which is consistent with no gender differences in risk aversion.

Lower risk aversion among CEOs has also been investigated. For example, Faccio et al. (2016) finds that firms led by female CEOs engage in significantly less risk-taking. However, empirical evidence on gender differences in risk aversion faces challenges: specifically, there are concerns about reverse causality, as it is possible that less risky firms are more likely to attract female directors and CEOs, rather than female leadership causing reduced risk-taking, which is the focus of our study.

Another interesting empirical angle is how outsiders/owners react to the gender of CEOs and directors. Carvalho (2025) shows that financial markets react asymmetrically to bad news about firm performance, depending on the gender of the CEO, where analysts react less negatively to bad news delivered by male CEOs. In our study we do not observe that shareholder bids differ in a response to whether a male or female manager is responsible for the investment decision, and show that share prices are the same under both male and female managers. However, when eliciting beliefs the majority of subjects expect that male managers will invest more, and that male led firms will have higher share prices. In our study, there are no other confounding variables, e.g. other factors which may affect investment decisions/share prices, which allows us to evaluate the impact of gender on firm value in a more direct way.

[6] See Knyazeva et al. (2021) for a recent survey of gender and corporate boards.

2.3 Gender and asset pricing

The third major literature that we contribute to asks whether portfolio decisions and/or stock pricing vary with the gender of the decision maker. While the portfolios of female investors have been found to be less risky,[7] it is not clear whether this reflects an underlying difference in preferences. For example, Bacher (2024) shows that this can be rationalized with a structural life-cycle model, where the lower risk may reflect lower income in female-dominated households.

An alternative empirical approach is to investigate gender differences in trading behavior. Looking at brokerage data, Barber and Odean (2001) find that men trade stocks as much as 45 percent more than women. A higher propensity to buy but not to sell has also been documented using detailed Finnish data (Grinblatt and Keloharju, 2001). Using an individual choice experiment, Cueva et al. (2019) find that men submit about 41 percent more trade orders than women. However, in these settings it is often better to trade less, which means that lower trading by women does not necessarily reflect higher risk aversion.

In terms of bidding behavior in asset markets, experimental studies have generally found no gender differences. Eckel and Füllbrunn (2015), using a classic Smith et al. (1988) environment, find that all male groups trade an asset at higher prices than all female groups, and that this gender difference disappears when single-gender groups are in a mixed gender room (Eckel and Füllbrunn, 2017). Using data from 166 experimental markets, Huber et al. (2024) compare the gender participation ratio against asset prices in their markets, and find support for the conclusions in Eckel and Füllbrunn (2017), but not for those in Eckel and Füllbrunn (2015). Altering the classic downward fundamental asset value to a constant value also eliminates the gender differences between groups (Cueva and Rustichini, 2015 and Holt et al., 2017).

Our paper combines different strands of literature to study risk preferences and trading decisions in relation to gender in a single experiment. We find that (i) there is no gender difference in risky investment decisions, (ii) share prices are the same under both female and male managers, and (iii) markets may mitigate individual bias.

[7] See for example evidence from US household surveys (Sunden and Surette, 1998; Jianakoplos and Bernasek, 1998), mutual funds in the United States (Dwyer et al., 2002), pension fund decisions at an Australian university (Watson and McNaughton, 2007) and in brokerage data for China (Feng and Seasholes, 2008). See also the summary in Croson and Gneezy (2009).

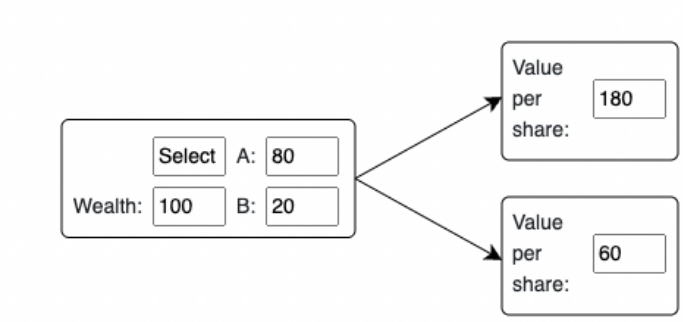
3 Experimental Environment

The environment consists of a firm with n-shares, and n-shareholders, i.e. each shareholder is endowed with a single share. Shareholders can trade a single share at a unique clearing price, P. The firm is run by a manager whose investment choices determine the firm's fundamental value. The manager faces uncertainty regarding the investment outcome and receives fixed remuneration when making decisions for others. When shareholders enter the market, they do not have information about the manager's investment decision, but they know whether the manager is a man or a woman.

The firm's fundamental value per share is denoted as $v = V/n$. The manager's investment decision affects v, as the manager allocates an initial endowment of 100 between a risky project (A) and a risk-free asset (B). The value invested in A can go up by a factor of 2 in a good state, which occurs with probability 0.5, or down by a factor of $1/2$ in a bad state with probability 0.5. Investment in B yields zero returns, and carries zero risk. The risky investment is constrained to 200, which can occur if the manager

Figure 1: User-interface: Investment decision

The figure presents the user interface shown to the participants. Subjects fill A (risky project), and the UI completes B (risk-free asset) as $100 - A$. The UI is based on Magnani et al. (2022).



borrows 100 from asset B (represented as -100 in B) and invests it (plus endowment) in A. This condition ensures that the final wealth is never below zero. Similarly, the manager can borrow against A (represented as -100 in A), and invest in B. However, borrowing against A is inefficient since the investment returns for A are larger than the risk-free return of B. Figure 1 shows the user interface (UI) employed in the experiment. When a manager fills the value for A, the UI fills the value for B, satisfying the initial wealth constraint of $B = 100 - A$. For example, if the manager invests 80 in A, then

$B = 20$ and v is $80 \times 2 + 20 = 180$ ($80/2 + 20 = 60$) in the up (down) scenario.

In our experiment, each market consists of $n = 5$ investors (initial shareholders). Recall that shareholders are informed of the manager's gender but not of the investment decision. They trade the firm's shares in a Bid-only Call Market (BOCM) as in Friedman et al. (2023).[8] Each trader $i = \{1, \ldots, n\}$ (where n is an odd number) submits a bid price $b_i \geq 0$ for a single share. The BOCM finds a clearing price P and net trade vector $\mathbf{a} = (a_1, ..., a_n)$ with $\sum a_i = 0$ and $a_i = \{-1, 0, 1\}$; $a = 0$ means no trade, and +1 (-1) denotes buy (sell) one share. The market clearing price P is a solution to demand equals to supply. With an odd number of traders, the market clearing price is the median bid price. We can write the payoff function for each trader i as

$$u_i = v + a_i(v - P) \tag{1}$$

For all initial shareholders i with $b_i > P$ the market completely fills the buy order at price P, so $a_i = 1$ and the shareholder is a buyer who pays P. Likewise, each initial shareholder with $b_i < P$ is a seller, who sells the specified quantity: $a_i = -1$ at price P, receives payment P. Using the indicator function — $I[z] = 1$ if expression z holds and otherwise $I[z] = 0$ — , the market clears at price P by construction: share purchases $\sum a_i I[a_i > 0]$ equal share sales $-\sum a_i I[a_i < 0]$ where P is the median price.[9]

4 Hypotheses

In this section, we present testable hypotheses, based on past theoretical and empirical work. Our first hypothesis pertains to the managerial investment allocation decision, which incorporates an element of risk. In this case, the optimal strategy depends on the degree of risk-aversion. For example, a risk-neutral manager should fully borrow from the risk-free asset B (-100) and invest 200 in the risky asset A. With some degree of risk-aversion, the investment in A should decrease, but not below zero, as this yields inefficient outcomes.

Our first hypothesis assumes that there is no difference in the risky investment al-

[8] Managers are not involved in the share trading.

[9] It is possible that $b_j = P$ for $m > 0$ (initial) shareholders, i.e., that one or more shareholders reveal indifference to buying or selling at what turns out to be the market clearing price. For such groups, the BOCM sets $a_j = -\frac{1}{m}\sum a_i I[b_i \neq P]$, i.e., they equally split the residual supply or demand. Thus, the market clears even when there are bids exactly at the market price and the purchases and sales at other bid prices do not balance.

location between male and female managers, and if differences do exist, they are small (see discussion in section 2).

Hypothesis 1. ***(Manager's investment)*** *There is no difference in investment decisions of male and female managers.*

The second hypothesis focuses on the market value of a firm that is led by a female or male manager. The market value is derived from shareholder bids. Consistent with hypothesis 1 of no gender difference, we expect that there will be no difference in market prices across male and female led firms.

Hypothesis 2. ***(Shareholder's bidding behavior)*** *Shareholders' bid amounts do not differ between male- and female-led firms, and consequently, there is no difference in the resulting share prices.*

Although we do not expect any differences a priori, beliefs about managerial investment decisions may deviate from actual decisions. If males are believed to invest more in the risky project, the alternative hypothesis suggests that share prices will be higher for female-led firms than for male-led firms. For example, Eckel and Grossman (2002) find that stereotypical beliefs about gender and risk aversion are stronger than the actual gender differences.

The next three hypotheses relate to the beliefs of participants assigned the roles of either managers or shareholders. We begin with the first- and second-order beliefs about managers' investment choices, followed by beliefs about market prices. These subsequent hypotheses follow the earlier ones, which expect no gender difference.

Hypothesis 3. ***(First order investment beliefs)*** *Participants believe that there is no difference in investment in the risky project between male and female managers.*

Although we expect no difference, it is possible that the hypothesis is refuted if there are strong stereotypes regarding risk preferences, as found in Eckel and Grossman (2002).

Hypothesis 4. ***(Second order investment beliefs)*** *Participants believe that others believe that there is no difference in investment in the risky project between male and female managers.*

Again, while we expect no difference in second order beliefs, this hypothesis may be refuted if participants believe that others hold stronger stereotypes, as in Bursztyn

et al. (2020), who study attitudes in Saudi Arabia towards women working outside the home, and find that while most men privately support women working outside the home, they underestimate the support by other men. In our case, this would imply that while participants may privately believe that men and women invest the same in the risky project, they may underestimate the extent to which this belief is prevalent with others.

Our final hypothesis focuses on beliefs about the share prices of male- and female-led firms.

Hypothesis 5. ***(Share price beliefs)*** *Subjects believe that the share price of female-led firms is equal to that of male-led firms.*

This hypothesis builds on our earlier expectations of no difference in investment decisions and beliefs. We therefore expect the share prices of male and female-led firms to be the same. Alternatively, if subjects believe that females make less optimal investment decisions, this may lead to lower bids for female-led firms and consequently lower share prices.

5 Procedures

We design the UI in oTree (Chen et al., 2016) and recruit participants from Prolific to conduct the experiment. The experiment contains different stages which we describe in detail below. The first part consists of instructions, followed by attention and comprehension questions. The second part is the risky allocation part and/or bidding. The last part consists of questionnaires designed to capture beliefs, demographic information and attitudes towards woman managers.

Participants first provide consent and read the instructions (Appendix B) according to the randomly assigned role (managers or shareholders). After completing an attention check,[10] subjects answer a multiple-choice quiz that pays a fee for each correct answer. The objective of the quiz is to guarantee that subjects understand how the risky allocation affects the value per share.[11]

[10] The attention check reads: *Please choose blue in the list of options, before we proceed to the next question*. If subjects fail the attention check, they do not participate in the experiment.

[11] The questionnaire includes the following three questions: (1) *If R is invested in the risky project and that project decreases in value, then what is the value per share? Ans.* $R/2 + (100 - R)$; (2) *If R is invested in the risky project and that project increases in value then what is the value per share? Ans.* $2 * R + (100 - R)$ and (3) *What is the chance that risky project value decreases? Ans.* 50%. Each correct answer pays \$0.25.

Managers make two risky allocation decisions on two different pages —one on behalf of others (shareholders), and one for themselves. In the former, the final value per share affects the shareholder's payoff, while in the latter, it affects only the manager's payoff. In either case, the payoff translates to \$2 per 100 points. The computer randomly selects the page order for each manager. Subjects are informed about the type of task they face through a header on the screen, and a descriptive paragraph indicating whether the risky allocation decision affects others or themselves. Figure 1 depicts part of the UI the manager faced for both tasks. After selecting the amount to allocate to the risky project A, the UI automatically calculates the corresponding risk-free investment B, and displays the potential value per share according to the state (up or down). While managers do not receive feedback on the realized terminal value of the share, randomly drawn at the end of the experiment, they may change the allocation to A as many times as they wish before proceeding to the next page.

Each shareholder randomly encounters either a male or a female manager. They have information that the manager is a woman (or man) recruited from the United States. They are presented with the binomial tree as in Figure 1. Their first task is to select how much they believe that the manager allocated to A. We incentivize this belief by paying a fixed reward (\$0.25) if the stated belief is within the 10% interval of the manager's investment (see Figure A.3 in Appendix A). On the same page, the shareholders enter the bid price for the share. After the shareholders submit their bid, they proceed to the next page, where they make a risky allocation decision for themselves. At this stage, the shareholders are informed that their final earnings, beyond the payment from the belief elicitation, consist of either the risky investment allocation or the previous bidding decision. In either case, the payoff translates to \$2 per 100 points.

After completing the tasks above, both managers and shareholders answer three surveys regarding beliefs, demographics, and attitudes towards woman managers using questions from the women as manager scale (WAMS) (Terborg et al., 1977). The belief elicitation pays a reward of \$0.50 per correct answer, and includes the following:

1. *Excluding yourself, who do you think (men or women) allocated more to the risky project when playing on behalf of others, on average*;

2. *We previously asked whether you think men or women allocated more to the risky project when playing on behalf of others. What do you think was the most common response among other participants?*;

3. *Do you think that the share price was, . . . Higher when women (men) were managers,* or *Same under both men and women*.

We also asked how sure subjects are about their responses using a scale of 1 (not sure) to 10 (extremely sure). Next, subjects responded to questions (see Table 1) regarding their political preferences (left, center, or right), age, education (high school, bachelor or graduate), occupation (open question), and managerial experience (Yes/No). The WAMS survey presented six statements, listed in Table 2, using a scale of 1 (strongly disagree) to 7 (strongly agree) to measure the attitudes towards women managers.

Table 1: Demographics

The table summarizes the demographics of the sample.

	Role in main task			
	Manager		Shareholder	
	Women ($n = 160$)	Men ($n = 160$)	Women ($n = 243$)	Men ($n = 251$)
Education (fraction of total, per gender)				
High School	0.24	0.28	0.22	0.19
Bachelor	0.47	0.48	0.41	0.44
Graduate	0.28	0.24	0.37	0.37
Political affiliation (fraction of total, per gender)				
Left	0.56	0.40	0.40	0.33
Right	0.17	0.29	0.33	0.39
Center	0.27	0.31	0.27	0.27
Occupation (fraction of total, per gender)				
Business	0.16	0.24	0.29	0.33
Education and Training	0.20	0.09	0.08	0.08
Healthcare and Social Services	0.07	0.01	0.12	0.06
IT & Engineering	0.07	0.17	0.08	0.17
Service and Retail	0.11	0.18	0.17	0.18
Other	0.39	0.20	0.26	0.18
Fraction with managerial experience	0.57	0.57	0.57	0.69
Age (mean)	39	37	38	36

We recruited a gender balanced subject pool for the manager and shareholder roles. In total, we obtained data from 364 managers and 621 shareholders, though we constrain our analysis to subjects who answered at least two out of three comprehension

questions correctly in order to eliminate noise from those who did do not understand the investment decision. Thus, our final dataset includes 320 managers (160 men and 160 women) and 494 shareholders (251 men and 243 women).[12] The higher failing rate in the shareholder population can be explained by the longer instructions for this group, where the task elicited both investment and bidding strategies.

Table 2: Attitudes towards female managers (mean)

The scale for each question is from 1 (strongly disagree) to 7 (strongly agree). The odd numbered questions have higher scores than the even numbered by design: higher (lower) scores imply a positive (negative) attitude. The last row presents average attitudes using an index with a normalized scale; the scores for questions 2, 4 and 6 are reversed.

		Role in main task			
		Manager		Shareholder	
Number	Question	Women ($n = 160$)	Men ($n = 160$)	Women ($n = 243$)	Men ($n = 251$)
1	Women are as capable of managing as men	6.36	5.90	6.21	5.56
2	Women are not as aggressive as men in business situations	4.27	4.28	4.08	4.39
3	Women have the capability to acquire the necessary skills to be successful managers	6.62	6.21	6.36	5.95
4	Women are not as competitive as men	2.96	3.65	3.18	3.61
5	Women can handle job pressures as well as men	6.19	5.54	5.88	5.24
6	Women are too emotional to be effective managers	1.98	2.66	2.55	3.31
Index	Normalized scale (1: less positive, 7: more positive)	5.66	5.17	5.44	4.91

The demographic characteristics of our sample are summarized in Table 1. Most of our subjects have bachelor degrees, with diverse political affiliations and occupations.[13]

[12] This restriction does not affect our results, as demonstrated in Table C.2 in Appendix C that replicates the summary of results presented in Table 3 using the unrestricted sample. Using the full sample simply makes the analysis more noisy, adding little value to our results.

[13] We used AI to categorize the occupation responses across six categories, and then we manually verified that the categories are consistent with the subject responses.

More than half of the subjects have managerial experience, and the average age is about 38.

Table 2 presents subject attitudes toward women managers, elicited after the main task. The odd numbered questions have higher scores than the even numbered by design: higher (lower) scores imply a positive (negative) attitude. Questions two and four are related to being aggressive and competitive in business situations, and women tend to score lower on these characteristics. We summarize the responses using an average index with a normalized scale, such that the score (from 1 to 7) increases with a more positive view. To normalize the scale, we reversed the scores for questions 2, 4 and 6. We find that men (managers and shareholders) tend to have slightly more negative views than women (5.66 for women managers and 5.17 for men managers, p-value$<$ .01 using a Wilcoxon test and Bonferroni correction for multiple hypotheses; 5.44 for female shareholders and 4.91 for male shareholders, p-value$<$ .01). Interestingly, we find some evidence that views also depend on the role played by participants, male participants who were managers in the experiment have slightly more positive views towards women (p-value of 0.031) but the difference is not significant for female participants (p-value of 0.082)

6 Results

6.1 Main Results: Managerial Decisions, Shareholder's Beliefs, and Market Prices

This section presents the results of our experiment, focusing on the analysis of the main hypotheses outlined in Section 4.

Result 1. *There is no difference in investment behavior between male and female managers.*

Consistent with hypothesis 1, we find no difference between the investment decisions of male and female managers. The median investment allocation to the risky project is 50 percent of the initial endowment, regardless of the manager's gender.

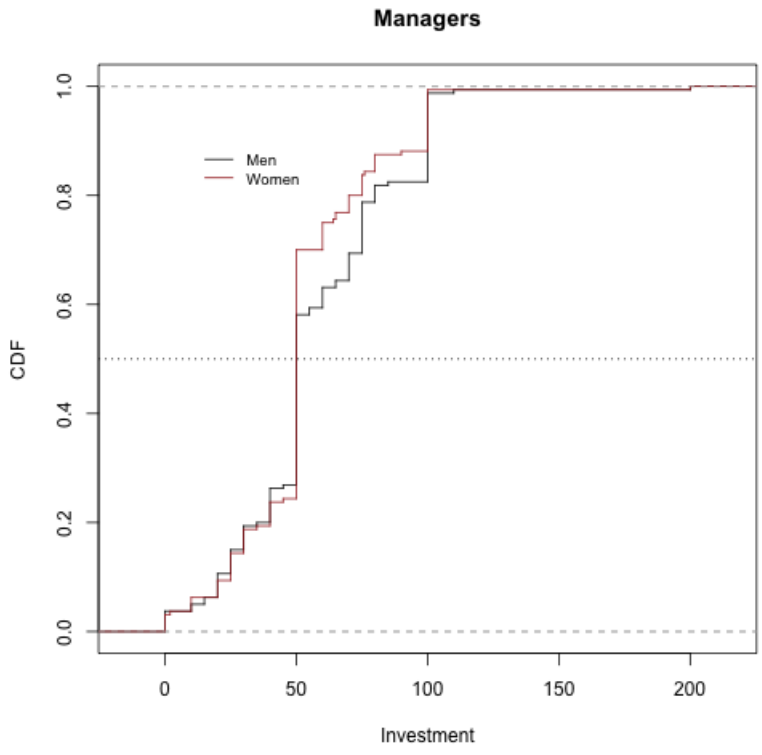
Table 3 provides a summary of investment decisions and bids from our experiment, with the top rows focusing on managerial investment decisions. Both male and female managers allocate approximately 50% of their endowment to the risky project, regardless of whether they invest on behalf of others or for themselves. While small gender

differences emerge when using the mean instead of the median as the summary statistic: 54% (female) compared to 58% (male) when investing for others; and 55% and 59% respectively, when investing for themselves; these are not statistically significant. We report the p-value from a nonparametric test (Wilcoxon rank-sum) comparing the choices of male and female managers and fail to reject the null hypothesis of no gender difference (p-value of 0.20 for investment on behalf of others and 0.50 for investment for themselves).

Figure 2 presents the Cumulative Distribution Function (CDF) for the delegated investment by male and female managers. Most of the mass for both CDFs centers at 50 (the median). Very few decisions occur at zero and 200, suggesting that while most managers are willing to take some risk, they are not risk-neutral (which would imply full leverage on B).

Figure 2: Delegated investment by gender

The Cumulative Distribution function (CDF) for the manager's investment choice by gender.



We next analyze the bids submitted by shareholders to assess whether they differ

Table 3: Summary of choices

The market price is computed using the median bid of the market. The market size is five subjects. We resample possible markets 150 times, where the shareholders randomly faced a male or female manager. In total, 241 subjects faced a female manager and 253 subjects faced a male manager. Thus, in each sample there are 48 markets with female manager, and 50 markets with male managers. The table presents the average prices per group, and the p-value is computed by picking randomly a simulation to maintain the assumption of independent observations necessary for a Wilcoxon-test.

	(W) Woman	(M) Man	(W-M) p-value
Managers ($n_l^{\mathrm{w}} = 160$, $n_l^{\mathrm{m}} = 160$)			
Investment			
For others (mean)	54	58	0.20
For others (median)	50	50	
Self (mean)	55	59	0.50
Self (median)	50	50	
Shareholders ($n_s^{\mathrm{w}} = 243$, $n_s^{\mathrm{m}} = 251$)			
Investment			
Mean	60	60	0.44
Median	50	50	
Investment belief for a given gender manager			
Mean	55	57	0.23
Median	50	50	
Female shareholder mean	54	59	0.18
Female shareholder median	50	50	
Male shareholder mean	57	56	0.72
Male shareholder median	50	50	
Bid for a given gender manager			
Mean	88	86	0.64
Median	100	100	
Female shareholder mean	83	83	0.91
Female shareholder median	95	80	
Male shareholder mean	93	89	0.55
Male shareholder median	100	100	
*Market price**	89	86	0.26

between firms led by male versus female managers.

Result 2. *There is no difference observed in shareholder bidding for male and female-led firms.*

Consistent with Hypothesis 2 and our previous Result 1, we find that shareholders submit similar bid prices for male and female-led firms (p-value of 0.64). The median bid is 100 for both managers. The left panel of Figure 3 presents the CDF for bid prices. For both male and female managers, the majority of bids are centered around two values: 50 and 100. This leads us to our second result.

The mean shareholder bid is about 87 for both genders. A risk-neutral shareholder should submit a bid of at least 100 since the lower bound on shareholder belief for manager's investment is zero (see Figure 4).[14] Examining the CDF of bid prices in the left panel of Figure 3, we observe that about half of the shareholders submit bid prices lower than 100, which suggests a risk-premium and/or willingness to sell.

To compute market prices, which are determined by the median bid in a market of five shareholders in the BOCM, we resample possible markets 150 times. In total, 241 subjects faced a female manager and 253 subjects faced a male manager. Thus, in each sample there are 48 markets with a female manager, and 50 markets with a male manager. One (three) subject(s) in the role of the shareholder with a female (male) manager was (were) excluded randomly when the shareholder population is not a multiple of five. The average market prices obtained are 86-89, and are much smaller than the risk-neutral bid of 112.5, which corresponds to a belief of investing 50 in the risky project (the median belief). Consequently, we observe a significant discount for the shares traded in the market.

Result 3. *Shareholders' point estimates of managers' investment allocation are similar for male and female managers (consistent with Hypothesis 3) and closely aligned with the actual investment allocations made by the managers. However, when asked to make a comparative judgement about investment behavior across gender, a strong belief emerges that male managers invest more in risky projects than female managers.*

Table 3 shows that the shareholders, on average, believe that female managers invest similarly as male managers (p-value of 0.23). The mean (median) belief is around 55 (50). This result is based on elicited investment belief which appears in the same page as the bidding decision.

[14] Given the parameters employed in the game, an increase in risky investment should increase the bid of a risk-neutral shareholder by 1/4. Consequently, a risk-neutral shareholder submits a value greater than 100 if they believe that the manager's investment is greater than zero.

Figure 3: Shareholder bids

The Cumulative Distribution function (CDF) for the shareholder bids. The left panel reports the bids by the manager's gender. The right panel depicts the bids by the shareholder's gender. The maximum bid is constrained to 300 while the minimum bid to one.

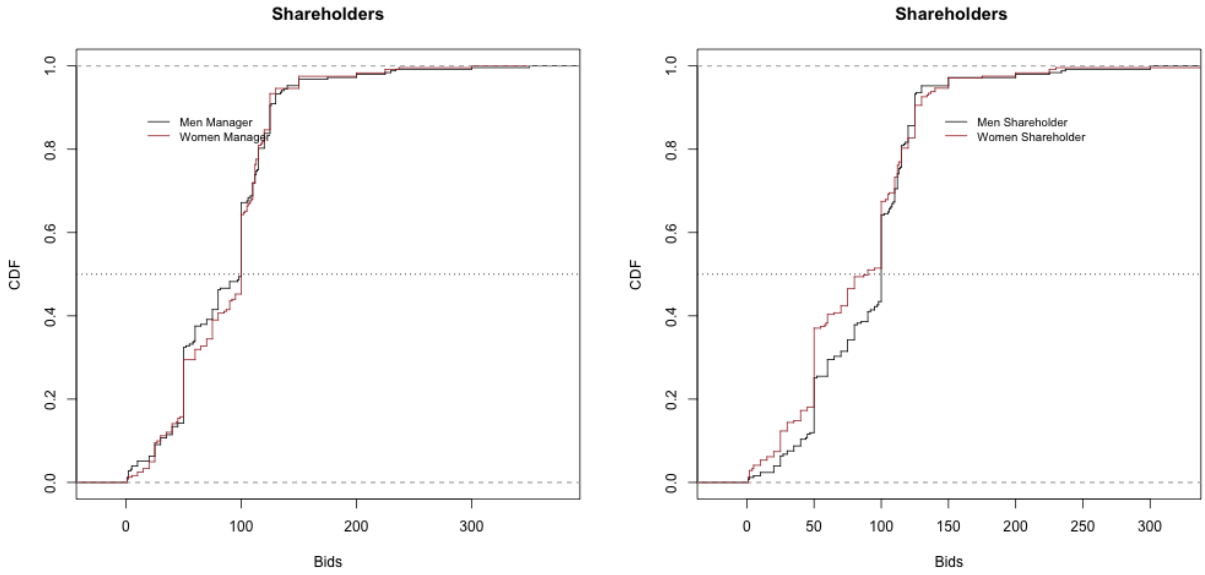


Figure 4 shows that the CDF for shareholder investment beliefs for male and female managers are similar. About 30 percent of the shareholders believe that male and female managers invest 50, which is also the most common allocation (see Figure 2 and the comparison with the actual choice in Figure 5. More formally, we test whether the shareholder's beliefs match the manager's investment choice using a Wilcoxon test. We find that beliefs are correct for both types of managers (p-value of .607 for men and p-value of .780 for women).

Additionally, as illustrated in Figure 6, which presents the CDFs for investment beliefs for male and female shareholders separately, we do not observe any difference according to the shareholder's gender (p-value of 0.55 for men and p-value of 0.91 for women).

Complementary to the point belief elicitation of managerial investment decisions, subjects responded to a multiple choice question that asked whether male or female managers allocated more to the risky project, or whether the allocation was the same across genders. Table 4 presents the frequency of each response.[15] More than 80 percent

[15]The options were randomized at the participant level: (i) On average, men allocated more to the risky

Figure 4: CDFs for shareholder investment belief

The Cumulative Distribution function (CDF) for shareholder's belief regarding the manager's investment. The figure reports the beliefs by manager's gender.

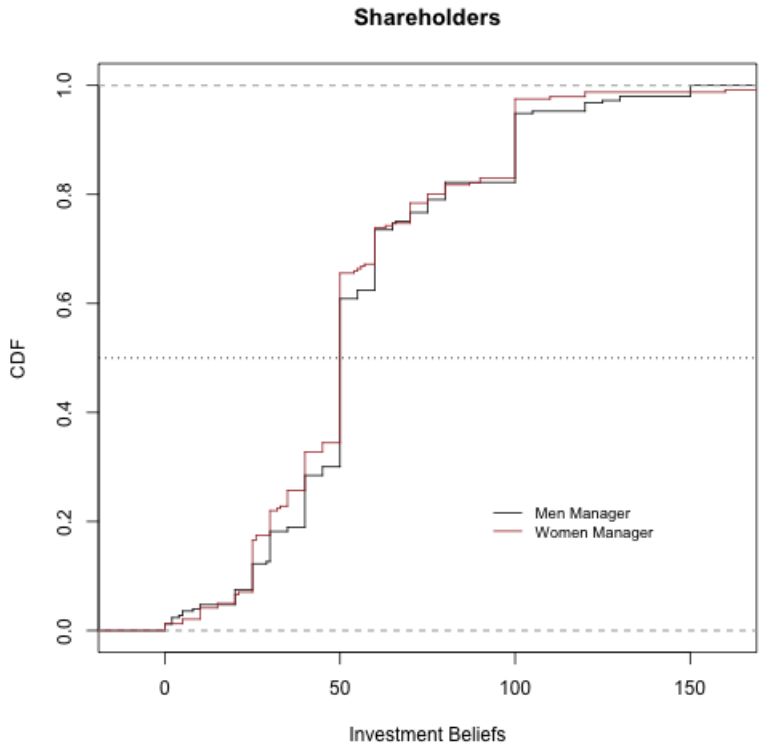
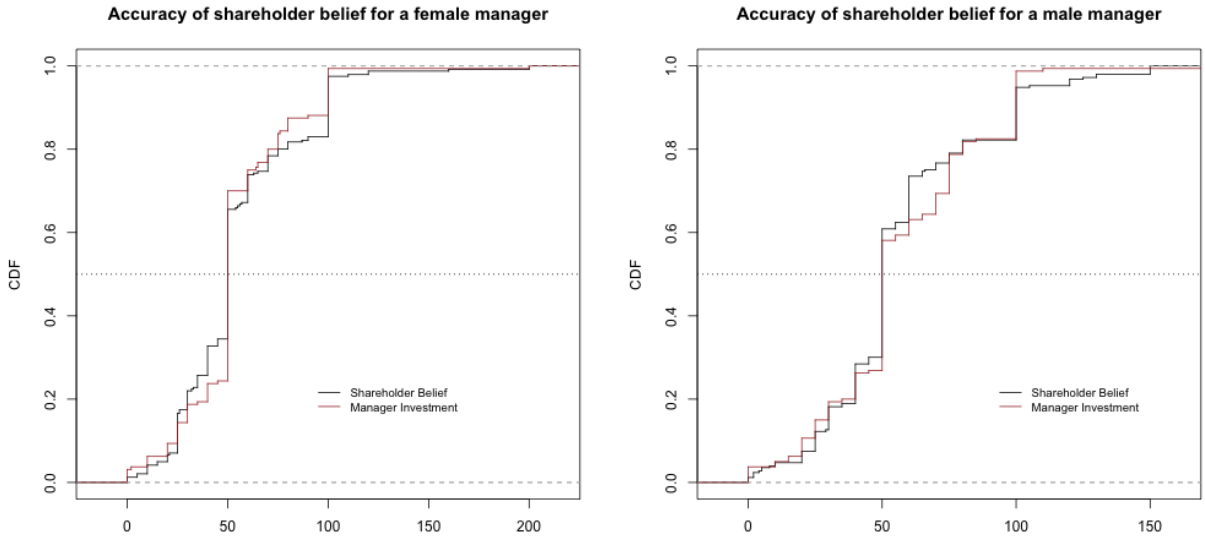


Figure 5: Shareholders belief accuracy on managers risky choice

The Cumulative Distribution function (CDF) for the accuracy of investment choice. The left (right) panel reports the data when the shareholder faces a female (male) manager. Each panel depicts the shareholder's belief and the manager's choice.



of both managers and shareholders stated that male managers, on average, allocated more to the risky project. About 11 percent believed that male and female managers invested equally, while a minority stated that female managers invested more than males.

Result 4. *Participants believe that male managers allocate more to the risky project than female managers.*

The first order beliefs were incentivized as described in section 5, and were always elicited after the investment and bidding tasks.

Next, we analyze participants' second-order beliefs, that is, their beliefs about what others expect regarding managerial behavior.

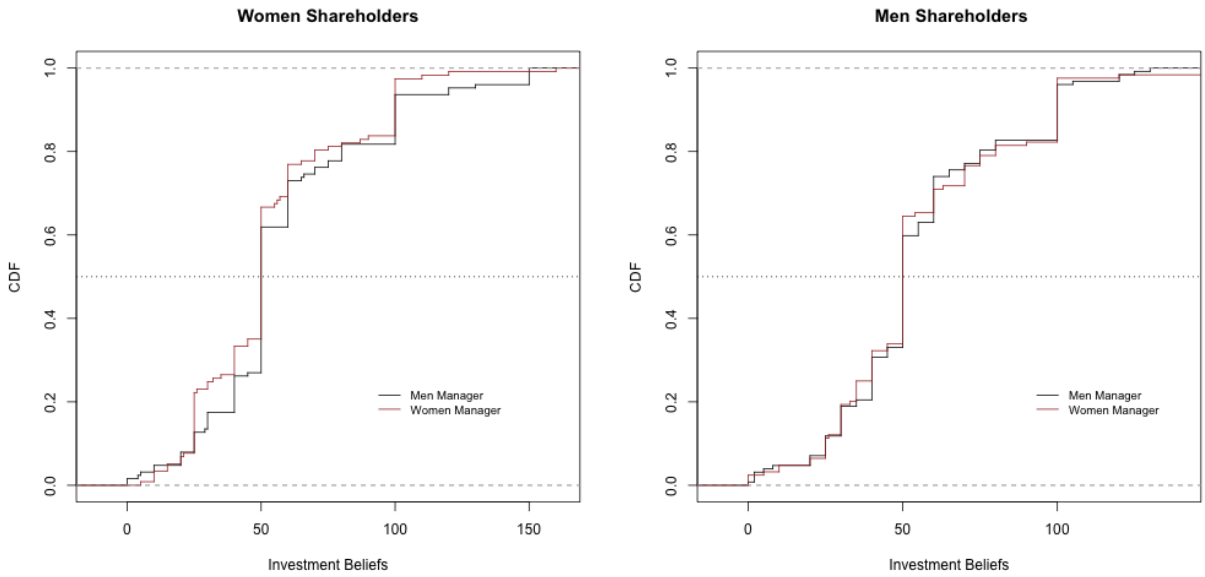
Result 5. *Participants also believe that others expect male managers to allocate more to the risky project than female managers.*

Contrary to Hypothesis 4, but consistent with the survey results in Result 3, we find that participants believe that others also expect male managers to invest more in the

project, (ii) On average, women allocated more to the risky project, and (iii) On average, women and men allocated similarly to the risky project.

Figure 6: Shareholders investment beliefs by gender

The Cumulative Distribution function (CDF) for the manager's investment belief by gender. The left (right) panel reports the data for women (men) shareholders.



risky project than female managers. The second-order belief responses, shown in the second panel of Table 4, closely mirror those of the first-order beliefs (p-value of 0.55). More than 80 percent of participants indicated that males invest more in the risky project than females, about 13 percent selected equal investment between genders, and a small minority believed that females invested more than males.

We now turn to participants' beliefs about the share prices of firms led by male versus female managers

Result 6. *The majority of participants believe that share prices are higher for firms led by male managers than for those led by female managers.*

This finding contradicts Hypothesis 5, but is consistent with our Results 4 and 5. The bottom panel of Table 4 shows that slightly more than half of the participants report that share prices are higher when firms are led by male managers.[16] Compared to the first-order investment belief answers (top panel of Table 4), the bias favoring male managers is less pronounced here. While about 80 percent believe that male managers invest

[16]The options were, in no particular order: (i) Higher when males were managers, (ii) Higher when females were managers, and (iii) Same under both males and females.

Table 4: Frequency of beliefs responses

The first order belief is captured by asking *Excluding yourself, who do you think (men or women) allocated more to the risky project when playing on the behalf of others, on average?* and the subjects selected a radio button with the alternatives (the third option omitted to simplify the table). The second order belief is measured by the answer to the question: *What do you think was the most common response among other participants?*, while the first order share price belief, *Do you think that the share price was ... (followed by the three possible options* The certainty is measured by the question *How sure are you about your response above 1-10* and the subject enters a digit. We present the mean choice divided by the maximum value of 10. We formally compare the difference of 1st order beliefs for investment and share price, and we find significant differences for all managers p-value $< .001$ and for all shareholders p-value $< .001$.

	Role in main task			
	Manager		Shareholder	
	Women	Men	Women	Men
1st order investment belief				
Man $>$ Woman	.87	.83	.84	.85
Man $=$ Woman	.11	.17	.10	.11
Confidence (0.1-1)	.67	.70	.71	.73
2nd order investment belief				
Man $>$ Woman	.84	.82	.83	.84
Man $=$ Woman	.13	.14	.11	.13
Confidence (0.1-1)	.67	.71	.70	.75
1st order share price belief				
Man $>$ Woman	.59	.47	.53	.57
Man $=$ Woman	.29	.40	.32	.32
Confidence (0.1-1)	.59	.59	.64	.66

more in risky projects, only around half believe this translates to higher share prices. Notably, the share of participants who believe that prices are the same under male and female managers rises to approximately 32 percent, nearly three times higher than the 11 percent who believed both genders invest equally. This shift in the distribution of responses is statistically significant (p-value $< .001$).

We also elicit participants' confidence in their responses using a scale from 1 (not sure) to 10 (extremely sure), which we normalize by dividing each response by 10. On average, participants show a moderate level of confidence, around 70 percent, for both first and second-order beliefs (see the last row of each panel in Table 4). Confidence decreases when it comes to beliefs about share prices, averaging about 0.65 for shareholders and 0.60 for managers. These reductions in confidence are highly significant (p-value $< .001$). The decrease in confidence is consistent with the decreasing share of subjects who believe that share prices are higher when men are managers, and provides support for the idea that while biases may exist, they are less persistent in markets.

6.2 Additional Results: Shareholders' Bidding Behavior and Beliefs About Managerial Investment Choice

In this section, we first examine whether shareholders' bidding behavior is influenced by their own gender or by the gender of the manager making the investment decision. Since shareholders are aware of the manager's gender but not their actual investment allocation, their bids may reflect both beliefs about risk-taking and potential biases. We begin by comparing bids submitted by male and female shareholders to examine whether there are systematic differences in their responses to the same investment environment.

Result 7. *There is no significant difference in the bids submitted by male and female shareholders.*

The right panel of Figure 3 compares the CDF of bids by female shareholders against that of male shareholders. We find no significant difference in the CDFs (p-value = .057). For the bids greater or equal to 100, we observe that the CDFs for male shareholders and female shareholders are very similar. Small but not significant differences appear for bids under 100. This lack of significant difference in bidding behavior between male and female shareholders is further supported by the OLS regression reported in Table 5, which we explain below.

Result 8. *Shareholder bids increase with their beliefs about the manager's investment in the risky project.*

Table 5: Shareholder's bid prices (OLS)

The dependent variable is the shareholder's bid and the regressors include demographic variables (age, gender, political affiliation, managerial experience and attitudes toward women managers). Additional regressors are the shareholder's risky investment and beliefs investment. The first specification pools all manager. The other two are broken down by manager gender. *p*-values in brackets.

	Dependent variable: Bid		
	(All managers)	(Male managers)	(Female managers)
Age	0.072	−0.059	0.239
	[0.521]	[0.729]	[0.159]
Woman	−4.587	−5.783	−4.676
	[0.116]	[0.179]	[0.295]
Left	2.940	2.817	−0.811
	[0.327]	[0.535]	[0.857]
Experience	11.022	14.198	9.928
	[0.000]	[0.002]	[0.028]
Attitudes	−0.030	−0.491	0.375
	[0.894]	[0.134]	[0.322]
Risky I	0.161	0.171	0.131
	[0.000]	[0.006]	[0.062]
Belief I	0.386	0.380	0.463
	[0.000]	[0.000]	[0.000]
Constant	45.661	61.741	28.580
	[0.0000]	[0.0000]	[0.039]
R-squared	0.149	0.124	0.236
Observations	467	241	234
R^2	0.245	0.240	0.248
Adjusted R^2	0.233	0.217	0.225

Table 5 presents the OLS estimation (p-values in brackets) for shareholder bids regressed on shareholder's beliefs of the manager's investment (*Belief I*), the shareholder's risky investment choice (*Risky I*) to control for the shareholder's risk attitudes, and individual characteristics, such as *Age*, *Attitudes* toward female managers, and dummy variables that indicate whether the shareholder is a *Woman*, has *Left* political views (compared to center and right) and managerial *Experience*.[17] The variable *Attitudes* is measured as the total sum of six questions out of the original 55 included in WAMS (Terborg et al., 1977); each question has a score of 1 for negative attitudes towards woman managers and 7 for positive attitudes.[18] The first specification of Table 5 includes all managers and shows that the coefficient for shareholder's beliefs is positive and about 0.4 (p-value $< .001$).[19]

Furthermore, aligned with the non-parametric analysis presented in relation to Result 6, female shareholders submit similar bid prices compared to male shareholders (p-value of .116). We also find that those with managerial experience tend to submit larger bids (an increase of 11 points, p-value $< .001$) and that shareholders who invest more in the risky investment, are also willing to bid more by 0.161 (p-value $< .001$)

The next two specifications in Table 5 restrict the sample by manager's gender: the second column constrains the sample to bids for male managers, while the third column constrains the sample to bids for female managers. The significance of the shareholder's beliefs persists in these specifications, as well as the relevance of experience in managerial tasks. The shareholder risk attitudes appear more relevant for male managers compared to female managers, as this variable is not significant for the latter. (p-value of .062).

It is also worth noting that the variable *Attitudes* changes sign across specifications two and three, which is consistent with the idea that a positive attitude towards female managers increases bid prices for female managers while a less positive attitude should increase the bids under male managers. However, neither of the two coefficients are statistically significant at the five percent level.

[17] We censor the bids at 2.5 percent in each tail of the bid distribution to eliminate outliers.

[18] Similarly to the procedure explained in Table 2, we reverse the scores for questions 2, 4 and 6 to make them comparable to the scores obtained in questions 1, 3 and 5.

[19] We also test whether the coefficient *Belief I* varies according to the manager's gender. To do this, we run a new regression for all managers, including a new dummy variable for the manager's gender and all interactions with the other independent variables. To avoid overfitting, we use as independent variables the main variable of interest (*Belief I* and *Risky I*). We fail to the reject that interaction of the variable *Belief I* and the new dummy variable is not significant.

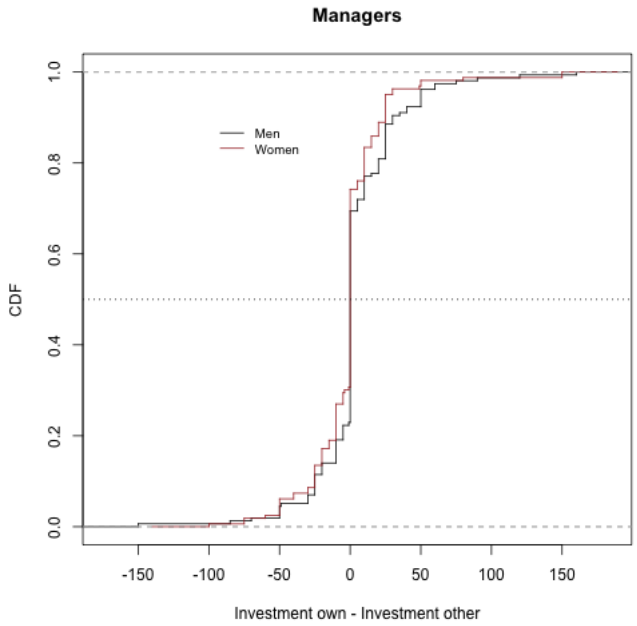
We next focus on the following question: When making investment decisions on behalf of others, do managers rely on their own personal investment preferences or adopt a distinct approach? Understanding whether delegated choices align with private choices is crucial, as it reflects the extent to which personal preferences influence decisions made on behalf of others.

Result 9. *Managers tend to make delegated investment decisions that align with their own investment choices.*

Figure 7 presents the CDF of the difference between the manager's own investment and the investment made on behalf of others (delegated). For neither gender is this difference statistically significantly different from zero (p-value of 0.44 for female managers and 0.08 for male managers). We also find no significant gender difference in delegation behavior (p-value of .08). Other managerial characteristics, such as gender, education, political preferences, and managerial experience, do not appear to influence delegated investment decisions (as documented in Table C.1).

Figure 7: CDFs for manager's investment own - other

The Cumulative Distribution Function (CDF) for the difference of the manager own investment choice against the delegated investment choice. The Figure reports the data for both men and women managers.



7 Conclusion

In this paper, we present an experiment designed to investigate whether gender differences in risk aversion contribute to the persistent under-representation of women in corporate leadership. Our experimental setup enables an examination of whether a manager's gender affects investment choices and how these choices are subsequently valued by market participants through stock pricing.

We find that male and female managers do not differ significantly in their willingness to take risks. When faced with risky investment decisions, both genders tend to make similarly moderate choices, typically allocating about half of the available funds to the risky option. This challenges the common stereotype that female managers are more cautious or risk-averse than their male counterparts.

When asked, participants demonstrated accurate beliefs about managers' actual investment decisions, correctly anticipating that male and female managers made similar risk allocations. However, when explicitly prompted to compare managers by gender, strong stereotypes emerged. Over 80 percent of participants expected male managers to take on more risk than female managers, underscoring the persistence of gender-based perceptions about risk-taking.

Interestingly, these biased beliefs, although strong when explicitly elicited, were significantly weaker in market valuations. Shareholders did not differentiate share prices based on managerial gender, indicating that the market mechanism moderates individual stereotypes. While many participants held preconceived biases, the collective pricing process forced participants to focus more objectively on fundamental investment decisions rather than gender-driven perceptions.

In our experimental design, we carefully considered the potential impact that experimental demand may have on observed outcomes. One potential concern was that subjects may select answers to be politically correct, i.e. no difference between men and women. For this reason, not only do we incentivize each question, we also use different approaches to elicit beliefs. In the first part of the experiment, participants are matched with either a male or a female manager; that is, they do not interact with both. The results from this part show shareholder valuation of investment decisions via bid prices. In the second part of the experiment, participants complete an incentivized survey which directly compares beliefs about performance of female and male managers (without any feedback about matched manager performance). Here, the results show that a direct comparison may favor men, and may signal a bias in the selection process that does not

correspond with real decisions.

Our results have some notable implications. Firstly, they challenge the stereotype that female managers differ fundamentally from male managers in risk preferences and decision-making. This challenges a commonly suggested reason for fewer women in leadership roles. Secondly, our results indicate that even though individuals may hold biased views, the market as a whole can mitigate the impact of these biases. In other words, the market can act as a moderating force, dampening individual biases through collective decision-making.

While in our study, the market appears to diminish potential biases, we cannot necessarily claim that this will be true in all situations. For example, labor market outcomes have been shown exhibit bias, either favoring women (An et al., 2025), or men (Dastin, 2022), depending on the evaluation process. It may therefore be the case that while market participants are generally unbiased, the selection process, such as nomination to the board/general hire, may not necessarily be equitable. For this reason DEI initiatives, such as board quotas, may be particularly important in the upstream process.

References

Renée B Adams. Women (and men) in finance are not typical. *Revue d'économie Financiére*, 2024.

Renée B Adams and Patricia Funk. Beyond the glass ceiling: Does gender matter? *Management Science*, 58(2):219–235, 2012. doi:10.1287/mnsc.1110.1452.

Kenneth R Ahern and Amy K Dittmar. The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics*, 127(1):137, 2012. doi:10.1093/qje/qjr049.

Jiafu An, Difang Huang, Chen Lin, and Mingzhu Tai. Measuring gender and racial biases in large language models: Intersectional evidence from automated resume evaluation. *PNAS nexus*, 4 (3):pgaf089, 2025.

Annika Bacher. The gender investment gap over the life cycle. *The Review of Financial Studies*, 10 2024. doi:10.1093/rfs/hhae068.

Brad M Barber and Terrance Odean. Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics*, 116(1):261–292, 2001.

Leonardo Bursztyn, Alessandra L. González, and David Yanagizawa-Drott. Misperceived social norms: Women working outside the home in saudi arabia. *American Economic Review*, 110(10): 2997–3029, 2020.

Marcela Carvalho. Who gets the benefit of the doubt? CEO gender and news about firm performance. Working Paper, London Business School, June 2025.

Gary Charness and Uri Gneezy. Strong evidence for gender differences in risk taking. *Journal of economic behavior & organization*, 83(1):50–58, 2012.

Daniel L Chen, Martin Schonger, and Chris Wickens. oTree—An open-source platform for laboratory, online, and field experiments. *Journal of Behavioral and Experimental Finance*, 9:88–97, 2016.

Rachel Croson and Uri Gneezy. Gender differences in preferences. *Journal of Economic Literature*, 47(2):448–474, June 2009. doi:10.1257/jel.47.2.448.

Carlos Cueva and Aldo Rustichini. Is financial instability male-driven? Gender and cognitive skills in experimental asset markets. *Journal of Economic Behavior & Organization*, 119:330–344, 2015.

Carlos Cueva, Inigo Iturbe-Ormaetxe, Giovanni Ponti, and Josefa Tomás. Boys will still be boys: Gender differences in trading activity are not due to differences in (over) confidence. *Journal of Economic Behavior & Organization*, 160:100–120, 2019.

Jeffrey Dastin. Amazon scraps secret ai recruiting tool that showed bias against women. In *Ethics of data and analytics*, pages 296–299. Auerbach Publications, 2022.

Peggy D Dwyer, James H Gilkeson, and John A List. Gender differences in revealed risk taking: evidence from mutual fund investors. *Economics Letters*, 76(2):151–158, 2002.

B Espen Eckbo and Bernt Arne Ødegaard. Director informativeness following board gender-balancing: Evidence from insider trading. *Journal of Corporate Finance*, 2025. Forthcoming.

B Espen Eckbo, Knut Nygaard, and Karin S Thorburn. Valuation effects of Norway's board gender-quota law revisited. *Management Science*, 68:4112–4134, 2022a. doi:10.1287/mnsc.2021.4031.

B. Espen Eckbo, Knut Nygaard, and Karin S. Thorburn. Does mandatory board gender-balancing reduce firm value? *Harvard Business Law Review*, 12:407–437, 2022b.

Catherine C Eckel and Sascha C Füllbrunn. Thar she blows? Gender, competition, and bubbles in experimental asset markets. *American Economic Review*, 105(2):906–920, 2015.

Catherine C Eckel and Sascha C Füllbrunn. Hidden vs. known gender effects in experimental asset markets. *Economics Letters*, 156:7–9, 2017.

Catherine C. Eckel and Philip J. Grossman. Sex differences and statistical stereotyping in attitudes toward financial risk. *Evolution and Human Behavior*, 23:281–295, 2002.

Kristoffer W Eriksen, Ola Kvaløy, and Miguel Luzuriaga. Risk-taking on behalf of others. *Journal of Behavioral and Experimental Finance*, 26:100283, 2020.

Mara Faccio, Maria-Teresa Marchica, and Roberto Mura. CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, 39:193–209, 2016. doi:10.1016/j.jcorpfin.2016.02.008.

Lei Feng and Mark S Seasholes. Individual investors and gender similarities in an emerging stock market. *Pacific-Basin Finance Journal*, 16(1-2):44–60, 2008.

Antonio Filippin and Paolo Crosetto. A reconsideration of gender differences in risk attitudes. *Management Science*, 62(11):3138–3160, 2016.

Andreas Friedl, Andreas Pondorfer, and Ulrich Schmidt. Gender differences in social risk taking. *Journal of Economic Psychology*, 77:102182, 2020.

Daniel Friedman, John Duffy, Jean Paul Rabanal, and Olga Rud. Trade, voting, and esg policies: Theory and evidence. *Available at SSRN 4306156*, 2023.

Sascha Füllbrunn, Ola Kvaløy, and Wolfgang Luhan. Investing other people's money. In *Handbook of Experimental Finance*, pages 132–144. Edward Elgar Publishing, 2022.

Uri Gneezy and Jan Potters. An experiment on risk taking and evaluation periods. *The Quarterly Journal of Economics*, 112(2):631–645, 1997.

Mark Grinblatt and Matti Keloharju. What makes investors trade? *The Journal of Finance*, 56(2): 589–616, 2001.

Charles A Holt and Susan K Laury. Risk aversion and incentive effects. *American Economic Review*, 92(5):1644–1655, 2002.

Charles A Holt, Megan Porzio, and Michelle Yingze Song. Price bubbles, gender, and expectations in experimental asset markets. *European Economic Review*, 100:72–94, 2017.

Christoph Huber, Felix Holzmeister, Magnus Johannesson, Christian König-Kersting, Anna Dreber, Jürgen Huber, and Michael Kirchler. Do experimental asset market results replicate? High-powered preregistered replications of 17 claims. Technical report, Working Papers in Economics and Statistics, 2024.

A Can Inci, M P Narayanan, and H Nejat Seyhun. Gender differences in executives' access to information. *Journal of Financial and Quantitative Analysis*, 52(3):991–1016, June 2017. doi:10.1017/S0022109017000266.

Nancy Ammon Jianakoplos and Alexandra Bernasek. Are women more risk averse? *Economic Inquiry*, 36(4):620–630, 1998.

Anzhela Knyazeva, Diana Knyazeva, and Lalitha Naveen. Diversity on corporate boards. *Annual Review of Financial Economics*, 13(1):301–320, 2021. doi:10.1146/annurev-financial-101520-065559.

Jacopo Magnani, Jean Paul Rabanal, Olga A Rud, and Yabin Wang. Efficiency of dynamic portfolio choices: An experiment. *The Review of Financial Studies*, 35(3):1279–1309, 2022.

Julie A Nelson. Are women really more risk-averse than men? A re-analysis of the literature using expanded methods. *Journal of Economic Surveys*, 29(3):566–585, 2015.

Luc Renneboog and Yang Zhao. Us knows us in the UK: On director networks and CEO compensation. *Journal of Corporate Finance*, 17(4):1132–1157, 2011. doi:10.1016/j.jcorpfin.2011.04.011.

Esther-Mirjam Sent and Irene van Staveren. A feminist review of behavioral economic research on gender differences. *Feminist Economics*, 25(2):1–35, 2019.

Vathunyoo Sila, Angelica Gonzalez, and Jens Hagendorff. Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance*, 36:26–53, 2016. ISSN 0929-1199. doi:10.1016/j.jcorpfin.2015.10.003.

Vernon L Smith, Gerry L Suchanek, and Arlington W Williams. Bubbles, crashes, and endogenous expectations in experimental spot asset markets. *Econometrica*, pages 1119–1151, 1988.

Annika E Sunden and Brian J Surette. Gender differences in the allocation of assets in retirement savings plans. *The American Economic Review*, 88(2):207–211, 1998.

James R. Terborg, Lawrence H. Peters, Daniel R. Ilgen, and Frank Smith. Women as managers scale (WAMS): A measure of attitudes toward women in management positions. *Academy of Management Journal*, 20(1):89–100, 1977.

John Watson and Mark McNaughton. Gender differences in risk aversion and expected retirement benefits. *Financial Analysts Journal*, 63(4):52–62, 2007.

Appendix

A User interfaces

Figure A.1: Manager's decision for others

The figure illustrates the user interface that a manager faced when making an investment decision on behalf of other participants.

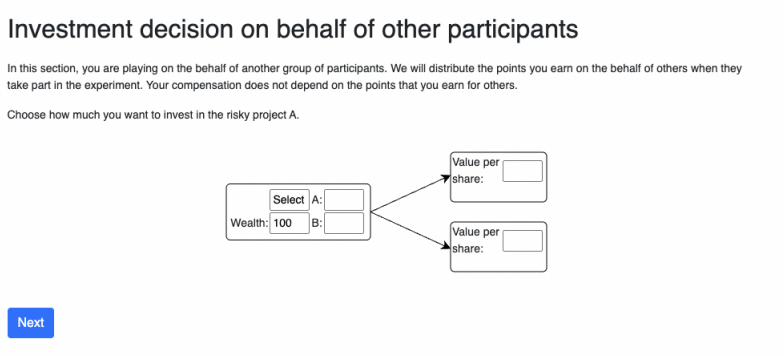


Figure A.2: Manager's own decision

The figure illustrates the user interface that managers faced when making an investment decision for themselves

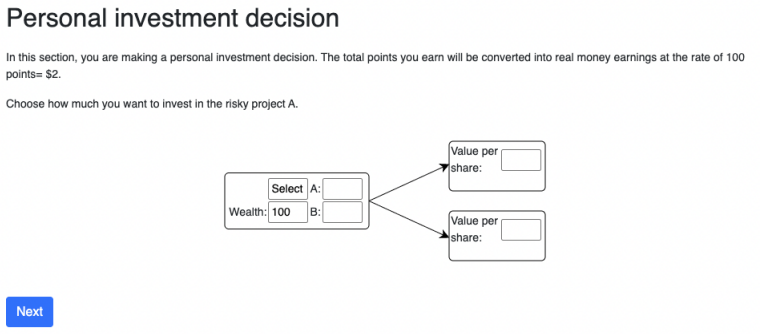


Figure A.3: Shareholder valuation

The figure illustrates the user interface that a shareholder faced which asked to provide belief about manager investment and bid price for the share in the firm.

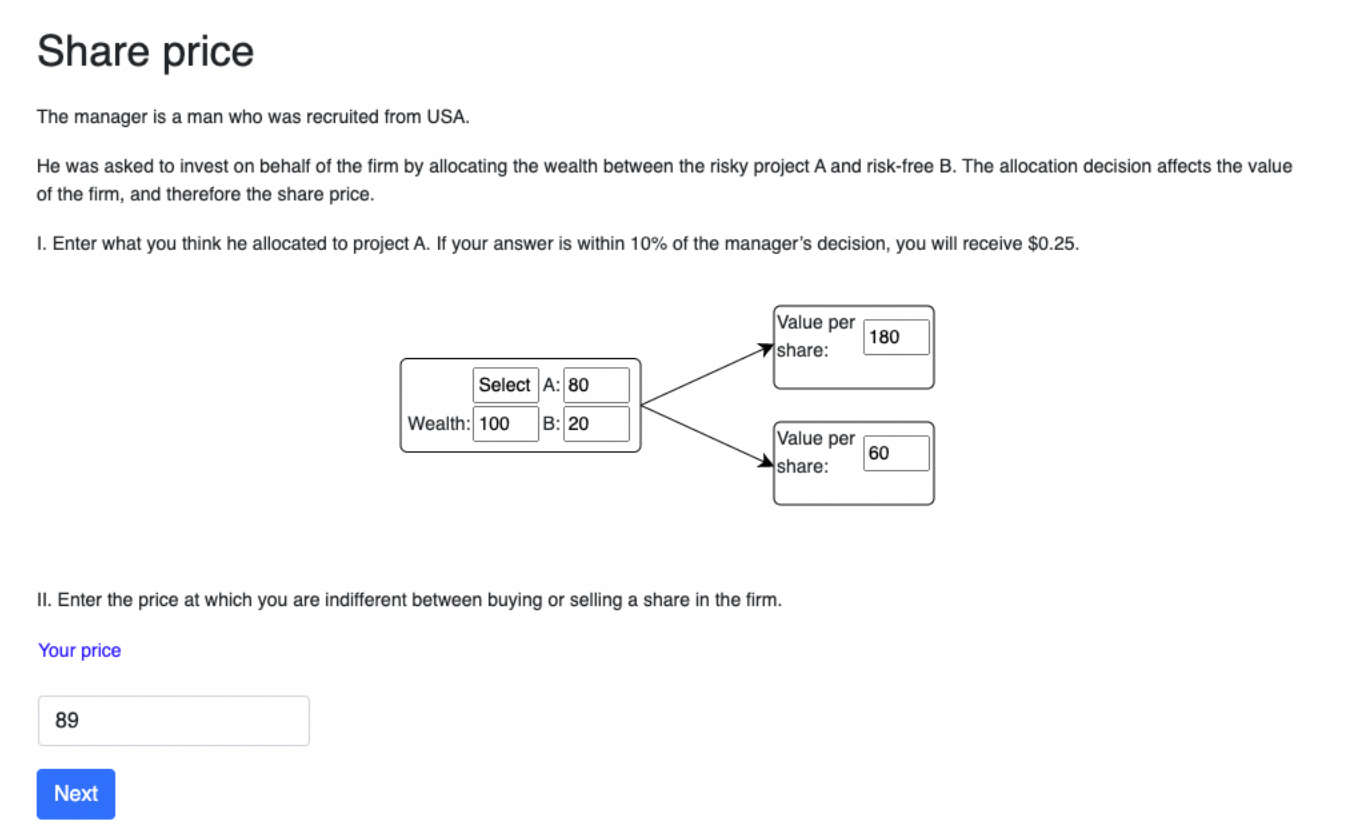
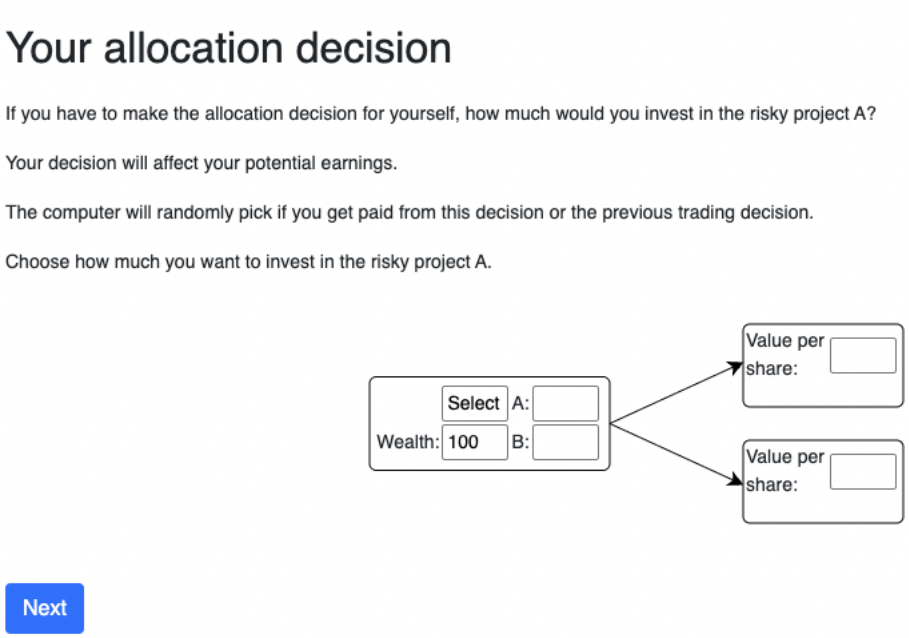


Figure A.4: Shareholder risky choice

The figure illustrates the user interface that a shareholder faced when making a risky allocation



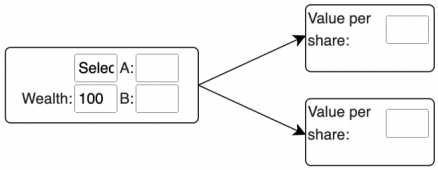
B Experimental Instructions

B.1 Managers

After reading the instructions below, the participants in the role of manager faced an attention question, three quiz questions, two investment allocation decisions (on behalf of others, and for themselves in random order), a belief questionnaire, and a survey. On each risky investment allocation page, the subjects are informed whether the final value per share is part of their earnings.

Figure B.1: Instructions to managers

General Instructions
Welcome to the experiment! Here you will have an opportunity to make an investment allocation decision. You will also participate in a short survey. Some of your responses may be shared with the group of participants, while still maintaining anonymity.
Task
In this task you will decide how much to invest in a risky project A and risk-free project B. You start with an initial wealth of 100 points, which you need to allocate between A and B.



The risky project A can double or halve its value with equal probability (a 50/50 chance generated by a computer coin flip). The final payoff to the investment decision is equal to what you allocated to A multiplied by 2 if the project is successful or by 0.5 if unsuccessful, plus what you allocated to B. Since B is risk-free, there are no gains or losses for B. The final payoff determines the firm's value per share.
You can enter a value for A that is lower or greater than the initial wealth. If you enter a value that is above your initial wealth for A, this means that you borrow from B (at the risk-free rate) and invest it in A. The only restriction is that you cannot default, which means that the final value per share cannot go below zero.
After you are happy with your allocation decision, click Next.
You will also be asked some comprehension questions after you click Next below.

B.2 Shareholders

After reading the instructions below, the participants in the role of shareholders faced an attention question, three quiz questions, an investment belief and bid price page, a risky investment allocation for themselves, a beliefs questionnaire, and a survey. On the risky investment allocation page, the subjects are informed that this task or the previous bid task randomly determines part of the earnings.

Figure B.2: Instructions to Shareholders

Welcome to the experiment! Here you will have an opportunity to trade a share of a company whose value depends on the decision made by a participant previously. This participant can be thought of as a manager of the company. The manager's compensation is fixed and not dependent on the company value. You will also participate in a short survey. Some of your responses may be shared with other participants, while still maintaining anonymity.

Task

You will be endowed with one share, and with a cash loan of 350 points. The cash loan must be paid back at the end of the round. When the market opens, you will have an opportunity to trade (buy/sell/hold) your share.

Since this is an asynchronous market, we will first collect the price at which you are willing to buy/sell the share, then we will compute the market price and the payoff, using the decisions made by all the participants. The total points you earn will be converted into real money earnings at the rate of 100 points= $2.

Market Details

Each market consists of 5 participants, each endowed with one share. The points that each share will earn depends on the decision made by the manager of the firm. This decision affects the share value.

Trading rules and market price

To trade in the market, you need to submit a price at which you are indifferent between buying or selling one share. Your submitted price and the market price will determine whether you buy or sell a share.

The market price at which all trades take place is the median of all submitted prices. The median price is the price for which 50% of all submitted prices lie above it and 50% of all submitted prices lie below it.

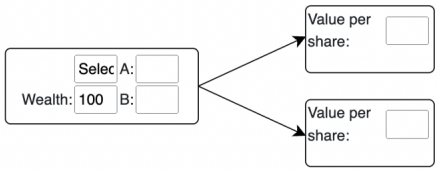
If your price is above the market (median) price, then you are a buyer and if it is below the market (median) price, then you are a seller. Thus, you will hold either 0, 1 or 2 shares.

Manager's decision

The manager made an allocation decision between a risk-free project B, and a risky project A. Project B keeps its value, meaning it carries whatever was invested in it. Project A can either double in value or halve in value with equal probability.

The initial value per share is 100. The manager needs to decide how much to invest in the risky project. The decision can be ANY value between 0 (everything invested in the risk-free project) and 200 (borrowing 100 at the risk-free rate)

The figure below shows the decision problem. You need to enter in the box next to A how much you think the manager allocated to the risky project A. If your answer is within 10% of the manager's decision, you will receive $0.25.



The possible final value per share is presented in the 2 boxes on the right. The final value per share depends on (i) the manager's allocation decision and (ii) whether the risky project (A) increases (with 50% chance) or decreases (also with 50% chance) in value.

Trading payoff

Your trading payoff is computed as follows: If you buy a share, your wealth will be reduced by the market price you paid, but you will receive the value per share (which depends on the managerial decision). If you sell your share, your wealth will increase by the market price. If you do not trade, then you will receive the value per share. All participants must repay their loan at the end of each round. You will also be asked some comprehension questions after you click Next below.

C Additional analysis

Figure C.1: CDFs for Shareholder investment belief - choice

The Cumulative Distribution Function (CDF) for the difference between the shareholder's investment belief on the manager's choice and the shareholder's investment choice. The figure reports such difference by the manager's gender.

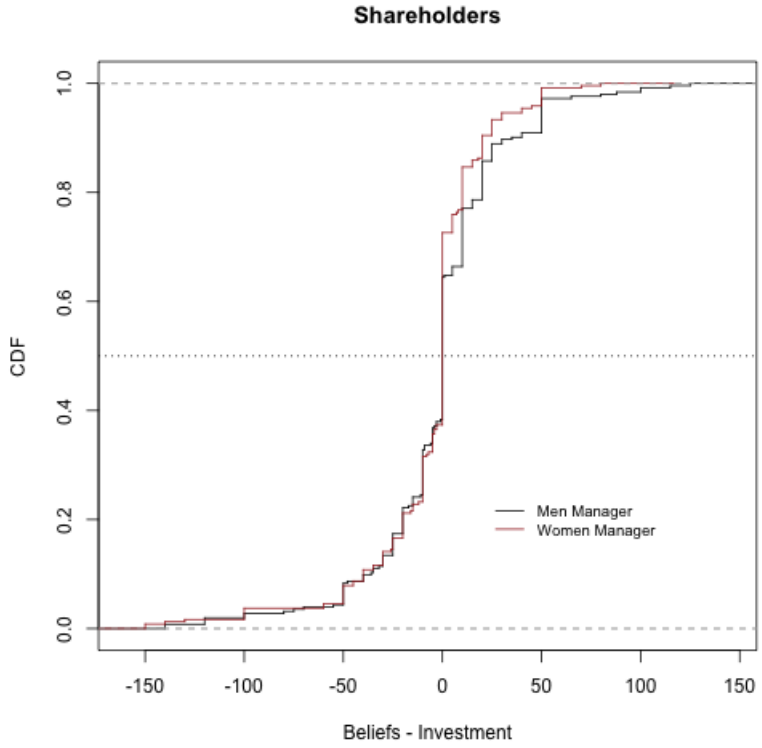


Figure C.2: CDF of Shareholders bids

The Cumulative Distribution Function (CDF) for the shareholder's bids. The left (right) panel shows the women (men) shareholders. Each panel presents the CDFs by manager's gender.

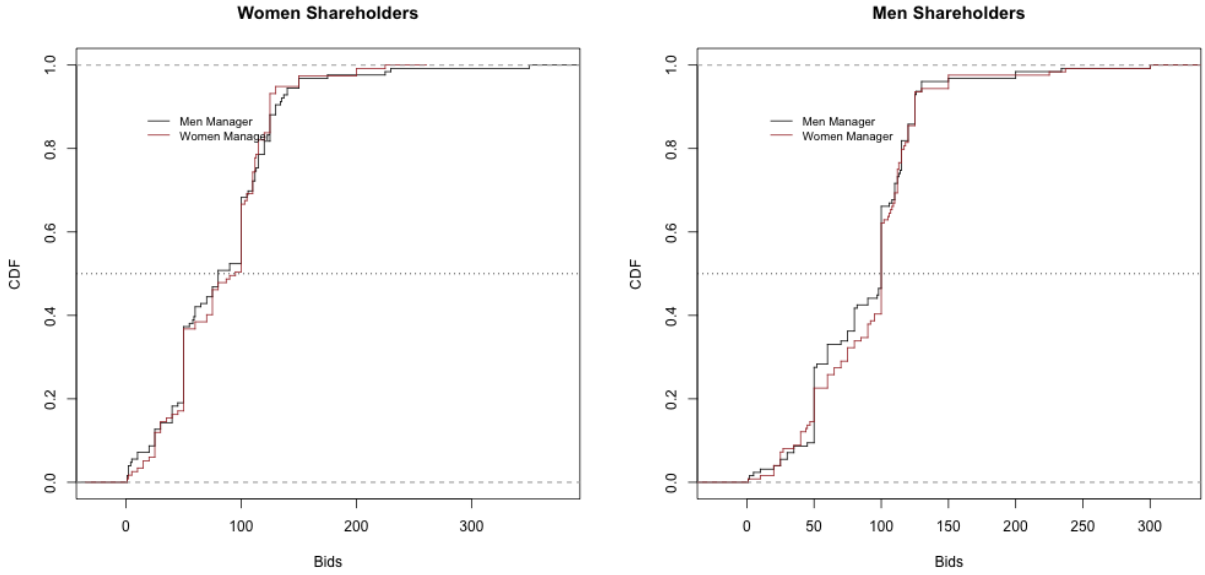


Figure C.3: CDF of Shareholders investment beliefs minus choices

The Cumulative Distribution Function (CDF) for the difference of the shareholder's investment belief and shareholder's investment choices. The left (right) panel shows the women (men) shareholders. Each panel presents the CDFs by manager's gender.

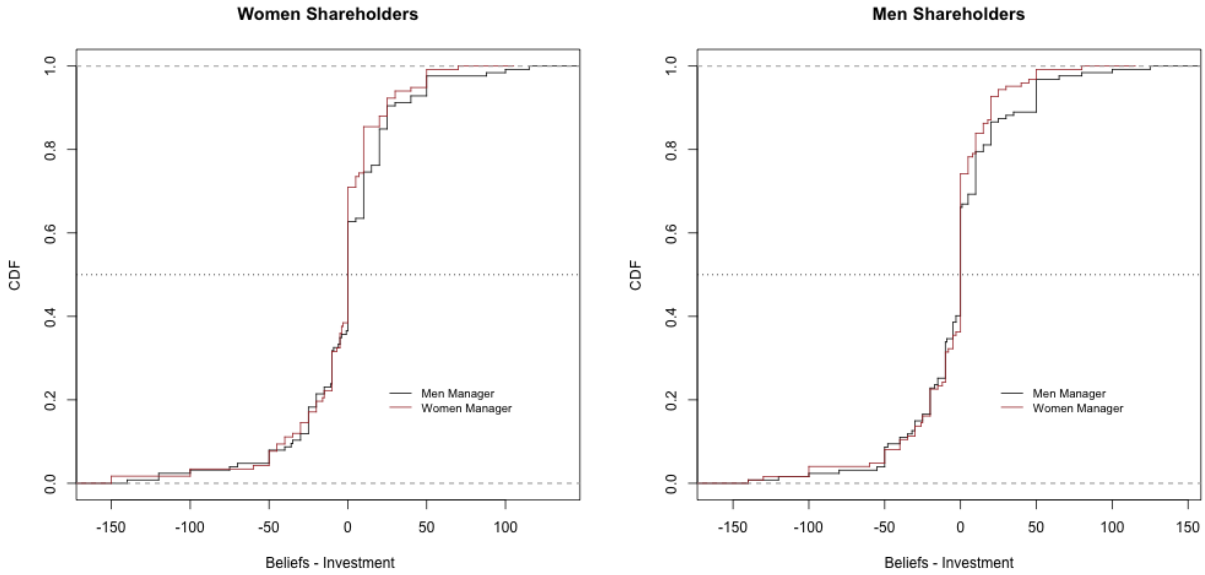


Table C.1: Manager's delegated investment

The dependent variable is the manager's delegated investment. The regressors include demographic variables (age, gender, political affiliation, managerial experience and level of education. *p*-values in brackets.

	Dependent variable: Investment for others	
	(I)	(II)
Age	−0.086	−0.046
	[0.539]	[0.731]
Woman	−3.838	−4.168
	[0.230]	[0.193]
Left	0.070	0.094
	[0.982]	[0.977]
Experience	4.439	
	[0.195]	
Graduate		6.135
		[0.167]
Bachelor		0.392
		[0.919]
Constant	58.308	57.719
	[0.000]	[0.000]
Observations	320	320
R^2	0.010	0.013

C.1 All data

Table C.2: Summary of choices

* The market price is computed using the median bid of the market. The market size is five subjects. We run 150 simulations of possible markets given that shareholders randomly faced a male or female manager. In total, 312 subjects faced a female manager and 309 subjects faced a male manager. Thus, in each simulation there are 62 markets with female manager, and 61 markets with male managers. One (three) subject in the role of shareholders with a female (male) manager was (were) excluded randomly in each simulation given the shareholder population is not a multiple of five. The table presents the average prices per group, and the *p*-value is computed by picking randomly a simulation to maintain the assumption of independent observations necessary for a Wilcoxon-test.

	(W) Women	(M) Men	(W-M) *p*-value
Managers ($n_l^{\mathrm{w}} = 182$, $n_l^{\mathrm{m}} = 182$)			
Investment			
For others (mean)	52	56	0.13
For others (median)	50	50	
Self (mean)	54	58	0.27
Self (median)	50	50	
Shareholders ($n_s^{\mathrm{w}} = 311$, $n_s^{\mathrm{m}} = 310$)			
Investment			
Mean	57	59	0.25
Median	50	50	
Investment belief for a given gender manager			
Mean	54	57	0.13
Median	50	50	
Female shareholder mean	54	58	0.21
Female shareholder median	50	50	
Male shareholder mean	54	56	0.40
Male shareholder median	50	50	
Bid for a given gender manager			
Mean	84	84	0.93
Median	94	90	
Female shareholder mean	80	82	0.83
Female shareholder median	75	78	
Male shareholder mean	88	86	0.76
Male shareholder median	100	100	
*Market price**	84	82	0.32